1847MNRAS...7..294D

mountain above 5000 feet high, brought on a rheumatic affection of the heart and diaphragm, from which Mr. Maclear is as yet, unfortunately, not free.

The Fuller theodolite, which was lent by the Society to the Lords of the Admiralty for this survey, seems not to have been adapted to the work; but the mode of using it, though very laborious, will remedy any faults in the construction. Each angle taken with the Fuller theodolite is measured at least eighty times, on forty successive arcs, each arc twice. The other theodolite is an eight-inch repeater, by Reichenbach. Ten repetitions make one measure, ten measures are considered a set. There are always two sets taken, and sometimes three or four.

The suffering and anxiety have been excessive. In a country so desolate, every thing, even water, has to be brought from a distance. "Frost and snow," Mr. Maclear remarks, "may be disregarded,— to battle with these we have fire and clothing; but there is no escape or remedy against heat, no substitute for water. If I had been aware of what I should have to undergo in the last six months, I think I should have shrunk from it."

The laborious part of this great undertaking* seems, however, to be now coming to a close; and Mr. Maclear looks with great delight to the comfort of regular observation.

On an Improvement in Tables of Proportional Logarithms. By Mr. Drach.

Mr. Drach's proposal is founded on Lieut. Raper's remarks (See Raper's *Navigation*, second edition, end of Explanatory Tables), viz. that when the difference of lunar distances exceeds 1° 13′, the nearest second is not always found from the proportional logarithms now in use.

This remark is perfectly correct; but when all the circumstances involved in the problem and its application are taken into account, it may be doubted whether any real advantage would be found, in *practical navigation* at least, from the improvement proposed.

On the Formation and Application of Fine Metallic Wires to Optical Instruments. By Mr. Ulrich.

Dr. Wollaston, in the *Philosophical Transactions* for 1813, proposed a method of forming wires of gold or platinum of any degree of tenuity. The discovery does not appear to have been much used, owing, as Mr. Ulrich supposes, to the difficulty of application.

Mr. Ulrich forms the fine wire by inserting a gold or platinum wire in the centre of a silver cylinder of much larger dimensions, which is afterwards drawn out by the usual process. When the silver wire has been sufficiently extended, Mr. Ulrich cuts it into

---

* See the last Annual Report for an account of Mr. Maclear's arc.

Downloaded from http://mnras.oxfordjournals.org/ at University of Georgia on May 27, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System

1847MNRAS...7..295S

short lengths, and attaches platina rings to each end. The rings are hooked upon a hooked fork, and the whole is plunged into heated nitric acid, when the silver coating is dissolved.

The artist may now wire his cell according to his fancy. Mr. Ulrich's plan seems to be, to hold one end by an overplate; then to allow the wire to be stretched by its platina ring, and to fix the other overplate. He recommends using a cell of the same material as the wire, as, otherwise, a difference of expansion might break or slacken the wires.

On the properties of Rock as a foundation of the Piers of Meridian Instruments, with an Account of the Detection of a hitherto unsuspected Cause of Error in the Edinburgh Transit. By Professor C. P. Smyth.

Some years ago, doubts were expressed of the fitness of a rock foundation for an observatory. It does not appear that any experiments were made, or that any reason was adduced beyond this, that as tremor was unfavourable to the performance of large telescopes, and as rock was more capable of transmitting tremors than less compact material, therefore rock was to be avoided when choosing a site for an observatory. The author or authors of this opinion were probably but ill acquainted with the mode of working an observatory, or the requisites for obtaining accuracy in meridian observations; yet it is certain that an undue importance was attached in some cases to these very idle surmises. At the present time it is not likely that any intelligent person would be misled by such authorities, and it is therefore unnecessary to mention here the mischief they have caused.* It is to be wished that the founders of future observatories, who can command a rock foundation, should make use of their good fortune; and that those who cannot, would look carefully to the possible effects of moisture, which are probably more extensive, and vary more rapidly, than those of temperature.

---

* The effect of tremor on a telescope is probably familiar to every reader of this notice. It causes a sort of burr round the object, and destroys the sharpness of outline and definition. This is probably more injurious in reflecting than in refracting telescopes; but we may fairly doubt whether it is more felt on solid than on loose foundations. In a *standard* observatory, where observations are made principally in the meridian, tremor scarcely affects the *accuracy* of observation at all, unless it is so excessive as to change the position of the microscopes, piers, &c. Now this is obviously the least likely to happen when the foundation is on rock; the tremors are propagated through the substance, without in any respect altering its form. Sudden and discontinuous changes, which obey no law, are those only which are to be feared in a well-directed observatory. Tremor is chiefly objectionable as disturbing the mercurial horizon, which, however, is now mostly used as a verification, not as the ordinary mode of observing; and when this inconvenience only occurs occasionally, it can generally be avoided or palliated by a little contrivance or foresight. Unless the *adjustments* are kept in a fluctuating and uncertain state by occasional small oscillations (and we believe no careful experiments have been directed to this point), they are minor evils. The experience of the Oxford and of the Edinburgh Observatory is, so far as it goes, conclusive against any danger from moderate exposure to tremors in a well-founded and well-managed observatory.—*S.*

Downloaded from http://mnras.oxfordjournals.org/ at University of Georgia on May 27, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System